REMARKS

This Application has been reviewed in light of the Office Action mailed January 25, 2008. At the time of the Office Action, Claims 1-35 were pending in this Application. Claims 1-35 were rejected. Claims 1, 2, 6, 10, 14, 25, 30, 33, and 35 have been amended to further define various features of Applicants' invention. Claim 32 has been cancelled without prejudice or disclaimer. Applicants respectfully request reconsideration and favorable action in this case.

Rejections under 35 U.S.C. §103

Claims 1-35 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,355,149 issued to Mark W. Casebolt ("*Casebolt*") in view of U.S. Patent 4,703,316 issued to Terry G. Sherbeck ("*Sherbeck*").

Applicants respectfully submit that *Casebolt* and *Sherbeck*, whether considered alone or in combination, do not teach every element of Applicants' claims as amended, as discussed below.

Amended Claim 1

Amended Claim 1 recites:

> 1. A touchframe system for determining the position of a touch event within a display area, said system comprising:
>
> a plurality of light emitting elements positioned around the perimeter of the display area;
>
> a plurality of light receiving elements in combination with the light emitting elements forming a plurality of triangular zones of light beam paths including:
>
> a first triangular zone and a second triangular zone partially overlapping with the first triangular zone to define a first overlap region; and
>
> a third triangular zone and a fourth triangular zone partially overlapping with the third triangular zone to define a second overlap region, the second overlap region at least partially overlapping with the first overlap region; and

wherein the touch event lies within at least the first overlap region and the second overlap region; and

a processor programmed to:

monitor each of the zone pairs for blockage of at least one light beam path; and

upon such blockage, calculate the location of the touch event associated with the blockage based on the slopes and end points of at least one blocked light beam path in each of the first, second, third, and fourth triangular zones. (emphasis added)

The Examiner acknowledges that *Casebolt* does not teach triangular zones, but alleges that *Sherbeck* teaches such features. However, *Sherbeck* does not teach a first overlap region between two triangular zones that *overlaps* a second overlap region between two triangular zones, as recited in amended Claim 1.

Sherbeck teaches four triangular zones (Zones 1-4), each of which is defined by overlapping light paths from two LEDs. (col. 2, lines 38-42). For example, Zone 1 is defined by the overlapping light paths from LED D0 and LED D1. (col. 2, lines 42-45). As shown in Figure 3 of *Sherbeck*, based on the geometry of the touch panel and location of the LEDs, each of Zones 1-4 defines a triangular quadrant of the touch panel, and none of Zones 1-4 overlap each other. Thus, assuming arguendo that each "Zone" of *Sherbeck* can be equated with an "overlap region" of amended Claim 1, *Sherbeck* does not teach a first overlap region between two triangular zones that *overlaps* a second overlap region between two triangular zones, as recited in amended Claim 1. In fact, the geometry disclosed by *Sherbeck* teaches away from such feature.

Further, *Sherbeck* fails to teach "calculate the location of the touch event associated with the blockage based on the slopes and end points of at least one blocked light beam path in each of the first, second, third, and fourth triangular zones."

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 1, as well as Claims 2-9 that depend from Claim 1.

Amended Independent Claim 10

Amended independent Claim 10 recites, in part:

> 10. A method of determining the location of a touch event within a display area surrounded by a touch frame having a plurality of light emitting elements and a plurality of light receiving elements forming a plurality of triangular zones of light beam paths, each triangular zone being defined by a light receiving element and a plurality of light receiving elements, the number and positioning of receivers being sufficient to form partially overlapping zone pairs such that the touch event lies within at least two zone pairs, said method comprising:
>
> (emphasis added)

The Examiner acknowledges that *Casebolt* does not teach triangular zones, but alleges that *Sherbeck* teaches such features. However, *Sherbeck* does not teach "each triangular zone being defined by a light receiving element and a plurality of light receiving elements," as recited in amended Claim 10. Just the opposite, *Sherbeck* teaches triangular zones defined by a *single light emitter* (one of LEDs D0-D3) and an *array of light detectors* (one of arrays T_R and T_L). (col. 2, lines 22-37; Figure 1). This difference is meaningful in at least some embodiments or applications. For example, Applicants discuss the advantage of using a reduced number of light emitting detectors in embodiments using relatively expensive IrDA light receivers. (*see, e.g.*, Applicants' Specification, page 7, lines 23-27).

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 10, as well as Claims 11-13 that depend from Claim 10.

Amended Independent Claim 14

Amended independent Claim 14 recites, in part:

> 14. A touchframe system comprising:
>
> a plurality of opposed perimeter sections;
>
> a plurality of triangular zones, each including a row of at least three light emitting elements positioned along one of the perimeter sections and an associated light receiving element positioned along the perimeter section opposite the light emitting elements, each of the at least three light emitting elements in a particular row of light emitting elements being aimed at a midpoint between (a) the light receiving element associated with the particular row of light emitting elements and (b) another light receiving element, each of the light emitting elements and associated light receiving element defining a light beam path;
>
> (emphasis added)

The Examiner acknowledges that *Casebolt* does not teach triangular zones, but alleges that *Sherbeck* teaches such features. However, *Sherbeck* does not teach "a plurality of triangular zones, each including a row of at least three light emitting elements," as recited in amended Claim 14. *Sherbeck* teaches a touch panel including four light emitters (LEDs D0-D3) and two linear arrays of light detectors (arrays T_R and T_L) on the left and right sides of the touch panel. (col. 2, lines 19-30). Each of the four LEDs D0-D3 is located at one of the four corners of the touch panel section. (col. 2, lines 27-30; Figure 1). The LED at each corner is aligned so as to illuminate the arrays of light detectors (array T_R or T_L) on the opposite side of the touch panel. (col. 2, lines 35-37).

Thus, *Sherbeck* does not teach "a row of at least three light emitting elements," much less "a plurality of triangular zones, each including a row of at least three light emitting elements," as recited in amended Claim 14.

Further, neither *Casebolt* nor *Sherbeck* teach "each of the at least three light emitting elements in a particular row of light emitting elements being aimed at a midpoint between (a) the light receiving element associated with the particular row of light emitting elements and (b) another light receiving element," as recited in amended Claim 14. The Examiner acknowledges that *Casebolt* does not teach such feature. (Office Action, page 9, regarding Claim 16).

However, the Examiner alleges that "*Sherbeck* teaches that . . . the center of the angle of dispersion of each light emitting element is directed toward a point midway between the two receivers (column 4, lines 35-70)." (Id.). However, column 4, lines 35-70 of *Sherbeck* do not teach such feature. Column 4, lines 35-70 merely discloses:

> The X-Y position where the finger touches can be calculated from the known positions of the LED's and the middle point of light interrupted area. If the finger interrupts the light for an odd number of phototransistors, the middle address of the light interrupted address block corresponds to the center point. If an even number of phototransistors is interrupted, the middle point of the light interrupted area corresponds to half way between the light interrupted address block. Each light path of the LED's is indicated by an equation of the form Y=mx+b, which contains the slope m and y - intercept b. The equations for the LED's are represented as follows:
>
> [Equations and variable key]

Thus, this passage discusses determining the middle point of an area of light interrupted by a finger touching the touch panel. The passage says nothing about the direction in which particular light emitting elements are aimed, much less that each light emitting element in a row of at least three light emitting elements is aimed at a midpoint between two particular light receiving elements.

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 14, as well as Claims 15-24 that depend from Claim 14.

Amended Independent Claim 25

Amended independent Claim 25 recites, in part:

> 25. A method of determining the location of a touch event within a display area surrounded by a touch frame having a plurality of light emitting elements and a plurality of light receiving elements forming a plurality of triangular zones of light beam paths each having a slope and endpoints, the number and positioning of receivers being sufficient to form partially overlapping triangular zones such that the touch event is fully located within each of at least four triangular zones, said method comprising:
> (emphasis added)

The Examiner acknowledges that *Casebolt* does not teach triangular zones, but alleges that *Sherbeck* teaches such features. However, *Sherbeck* does not teach "partially overlapping triangular zones such that the touch event is fully located within at least four different triangular zones," as recited in amended Claim 25. If the Examiner wishes to maintain the rejection of Claim 25, Applicants request that the Examiner identify at least four zones in which a touch even may be fully located.

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 25, as well as Claims 26-29 depend from Claim 25.

Amended Independent Claim 30

Amended independent Claim 30 recites, in part:

> 30. A touchframe system for determining the position of a touch event within a display area, said system comprising:
>
> a plurality of light emitting elements positioned around the perimeter of the display area; a plurality of light receiving elements, each of the light receiving elements in combination with a plurality of the light emitting elements forming a zone of light beam paths, the number and positioning of receivers being sufficient to form partially overlapping triangular zone pairs such that the touch event lies fully within at least two partially overlapping triangular zone pairs;
>
> (emphasis added)

The Examiner acknowledges that *Casebolt* does not teach triangular zones, but alleges that *Sherbeck* teaches such features. However, *Sherbeck* does not teach "the number and positioning of receivers being sufficient to form partially overlapping triangular zone pairs such that the touch event lies fully within at least two partially overlapping triangular zone pairs," as recited in amended Claim 30.

Sherbeck teaches four triangular zones (Zones 1-4), each of which is defined by overlapping light paths from two LEDs. (col. 2, lines 38-42). For example, Zone 1 is defined by the overlapping light paths from LED D0 and LED D1. (col. 2, lines 42-45). As shown in Figure 3 of *Sherbeck*, based on the geometry of the touch panel and location of the LEDs, each of Zones 1-4 defines a triangular quadrant of the touch panel, and none of Zones 1-4 overlap each other. Thus, assuming arguendo that the "Zones" of *Sherbeck* can be equated with the "partially overlapping triangular zone pairs" of amended Claim 30, *Sherbeck* cannot teach "the touch event lies fully within at least two partially overlapping triangular zone pairs," as recited in amended Claim 30. According to the system disclosed by *Sherbeck*, a touch event either (a) lies fully within *one* of Zones 1-4 (*see* Figures 3 and 4), or lies *partially* within multiple Zones 1-4 (*see* Figure 5). A touch event cannot fully lie within at least two of Zones 1-4 of *Sherbeck*.

For at least these reasons, Applicants respectfully request reconsideration and allowance of amended Claim 30, as well as Claims 31 and 33-35 that depend from Claim 30.

CONCLUSION

Applicants have made an earnest effort to place this case in condition for allowance in light of the amendments and remarks set forth above. Applicants respectfully request reconsideration of Claims 1-31 and 33-35 as amended.

Applicants believe there are no fees due at this time; however, the Commissioner is hereby authorized to charge any fees necessary or credit any overpayment to Deposit Account No. 50-2148 of Baker Botts L.L.P.

If there are any matters concerning this Application that may be cleared up in a telephone conversation, please contact Applicants' attorney at 512.322.2689.

Respectfully submitted,
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Date: April 11, 2008

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